

medical device



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X-ray radiation. High-temperature sterilization. Harsh cleaning solvents.

These are just a few of the challenges posed by medical device applications.

Today, many medical device manufacturers are meeting these challenges with thermoset composite materials. Thermoset bulk molding compound (BMC) and sheet molding compound (SMC) offer many advantages over metals, including:

- **High strength-to-weight ratio:** thermoset components are up to 35 percent lighter than steel parts of equal strength
- **Corrosion resistance:** thermosets withstand exposure to corrosive cleaning substances
- **Dielectric properties:** unlike conductive metals, thermosets provide electrical insulation
- **Molded-in color:** adding color in the molding process eliminates the need to paint components

Thermosets feature cross-linked molecules that help the materials maintain their high strength and other properties when exposed to extreme temperatures. For medical applications, BMC and SMC also offer X-ray transparency or opaqueness, antimicrobial properties, flame resistance, excellent cosmetic appearance, and easy cleaning.

In medical offices, thermosets are often used to protect critical equipment. For example, thermosets have replaced metals as the materials of choice for equipment housings in many dentists' offices. Besides costing less than metal alternatives, thermosets offer more styling flexibility and functionality than metals in housing applications. And since thermoset housings are molded in the proper colors, they do not have to be painted, which simplifies manufacturing and eliminates worries about scratching paint-covered surfaces. In addition, thermosets allow housing manufacturers to create high-gloss surfaces, and they allow medical personnel to clean and sterilize housings without causing damage. Other common medical applications for BMC and SMC include instrumentation bases and components, standard and contagious/biohazard trash cans and receptacles, and X-ray film containers.

engineered for performance

Property	Unit	Test Method	44-10MW	46-12	E-207	A-205
Physical and Mechanical Properties						
Impact Strength	FT-LBS/IN	ASTM D 256	3-4	8-10	18	15
Flexural Strength	PSI	ASTM D 790	13-15,000	19-22,000	34,000	28,000
Flexural Modulus	10 ⁶ PSI	ASTM D 790	--	--	2.1	1.8
Tensile Strength	PSI	ASTM D 638	5-6,000	7-9,000	18,000	13,000
Compressive Strength	PSI	ASTM D 695	18-20,000	23,000	34,000	28,000
Water Absorption	%	ASTM D 570	0.07	0.15	0.15	0.10
Specific Gravity	G/CM ³	ASTM D 792	1.90	1.78	1.68	1.78
Shrinkage	IN/IN	ASTM D 955	0.0005-0.0015	0.001-0.003	0.001	0.001
Hardness	Barcol	ASTM D 2583	25-35	30-50	40-45	35-45
Bulk Factor App.	--	ASTM D 1895	1	1	1	1
Electrical Properties						
Dielectric Strength	KV/IN	ASTM D 149	--	290	320	380
Arc Resistance	Seconds	ASTM D 495	--	180+	180+	--
Thermal and Flame Retardant Properties						
Heat Deflection Temperature @264PSI	°F	ASTM D 648	>500	>500	>500	>500
Flame Resistance	--	UL 94	--	--	--	--
	@1/16"	--	HB	V-0	94V-0	94-HB
	@1/8"	--	HB	V-0	94V-0	94-HB
	@1/4"	--	HB	V-0	94V-0	94-HB

IDI Composites International is the premier global formulator and manufacturer of thermoset molding compounds for custom molders and OEMs. The company provides customized polyester/vinylester-based bulk molding compounds (BMC) and sheet molding compounds (SMC) for the world's most demanding markets, including automotive/truck, electrical, food service, alternate energy, and appliance.

Headquartered in a 200,000 square foot facility in Noblesville, IN (USA), IDI has a strong presence in the international thermoset composites market. To support a growing customer base world-wide, the company operates multiple wholly-owned manufacturing facilities in Europe, Asia, and The Americas.

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